

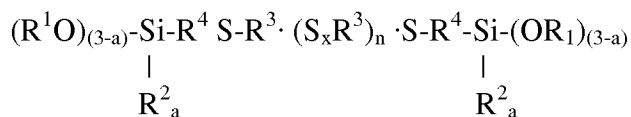
REMARKS

After entry of the present Amendment, claims 1-12 are pending in the application with Claims 1 and 9 in independent form. Claim 1 is currently amended to further define the chemical structure of the polysulfide-type polymer. Support for currently amended claim 1 can be found at least in paragraph [0029] of the subject application as published (specifically, U.S. Pat. Publ. Appl. No. 2006/0235120). Claims 11 and 12 are new and further define component (C). Support for new claims 11 and 12 can be found at least in paragraphs [0021] and [0022] of the subject application as published. Thus, no new matter is added in the present Amendment. No claims are cancelled or withdrawn in the present Amendment.

Claims 1-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 3,925,331 to Ely (hereinafter "Ely"). In particular, the Examiner contends that Ely discloses a moisture curable sealant composition which comprises the product of reacting a polysulfide with a silane, and that addition of a catalyst such as pyridine or sulfur enhances the amount of addition. The Examiner expressly admits that Ely fails to disclose a process wherein both a nitrogen containing base and sulfur are mixed with claimed components (A) and (B). However, to address this deficiency of Ely, the Examiner contends that it would have been obvious to prepare a silicon containing polysulfide type polymer by mixing a vinyl silane, mercapto terminated polysulfide, nitrogen containing organic base and elemental sulfur because Ely teaches that pyridine and sulfur are functional equivalents. In view of the Applicants' Amendment and the reasons set forth in greater detail below, the Examiner's rejection is respectfully overcome.

As the Examiner is aware, 35 U.S.C. §103 forbids issuance of a patent when “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” (emphasis added) *KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1734, 82 USPQ2d 1385, 1391 (2007). Further, the question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966). See also *KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct. at 1734, 82 USPQ2d at 1391. In addition, the MPEP provides seven examples of rationales for establishing a prima facie case of obviousness. Should the Examiner utilize any other methodology to establish obviousness, a commensurate level of specificity is required.

The Applicants note that, in view of currently amended claim 1 (as well as original claim 9), the silicon-containing polysulfide-type polymer formed from the method claimed in the subject application has the following general formula:



where R^1 is an alkoxyalkylene group or a monovalent hydrocarbon group with 1 to 10 carbon atoms, R^2 is a monovalent hydrocarbon group with 1-15 carbon atoms, other than monovalent hydrocarbon groups having an aliphatic unsaturated bond, R^3 is selected from an

alkylene group with 2 to 10 carbon atoms, an arylene group with 6 to 10 carbon atoms, an alkylenoxyalkylene group with 2 to 10 carbon atoms, or a divalent organic group of formula:



where R^8 are the same or different alkylene groups with 1 to 10 carbon atoms, and “m” is an integer between 2 and 20, and a hydroxy-substituted alkylene group with 3 to 12 carbon atoms; R^4 is a residue formed in an addition reaction of the aliphatic unsaturated bond contained in component (A) to a hydrogen atom of the mercapto group of component (B), “a” is an integer between 0 and 3, “x” is a number which on average is greater than 1 and smaller than 8 or equal to 8, and “n” is a number with a mean value between 1 and 120.

Conversely, Ely “provides a sealant composition maintained under anhydrous conditions, containing unreacted SH groups . . . and tin compounds (or other compounds capable of curing SH terminated polysulphides . . .” (emphasis added) (see column 2, lines 4-10 of Ely). This is supplemented in column 2, lines 48-55 of Ely, which states that “the reaction being carried out at a temperature and for a time and using a quantity of silane such that for the silane in question the proportion of the SH groups of the polysulphide which react with the silane is from 3% to 30% and the reaction with a silane containing a mercapto group being carried out with presence of a base having a pK of at least 9.” (emphasis added). Thus, it is clear that 70% to 97% of the SH groups remain unreacted after forming the sealant composition, i.e., the polysulphide polymer, in Ely, whereas the silicon-containing polysulfide-type polymer set forth above and claimed in the subject application does **not** include SH groups.

Not only does Ely fail to disclose, teach, or even suggest the structure of the silicon-containing polysulfide-type polymer claimed in the method of the subject application, but Ely expressly teaches away from the silicon-containing polysulfide-type polymer formed via the method claimed in the subject application by requiring at least 70% of the SH groups of its polysulfide polymer to remain unreacted for cross-linking with tin compounds. “A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.” *In re Gurley*, 27 F.3d 551, 553 (Fed.Cir.1994). As the Examiner is aware, “[a] prior art reference that ‘teaches away’ from the claimed invention is a significant factor to be considered in determining obviousness.” MPEP § 2141.02. Clearly, because Ely expressly requires at least 70% of the SH groups of its polysulfide polymer to remain unreacted for cross-linking with tin compounds, one of skill in the art would have no reason or motivation whatsoever to form a silicon-containing polysulfide-type polymer as presently claimed in view of the fact such a polymer can not undergo further cross-linking with tin compounds, as expressly required by Ely.

The Applicants respectfully note that the chemical structure now claimed in independent claim 1 was previously claimed in independent claim 9. When examining independent claim 9, the Examiner focused solely on the relative mole percents of each respective component utilized in the claimed method, rather than on the ultimate structure of the silicon-containing polysulfide-type polymer formed via the claimed method of the subject

application. Notably, Ely fails to disclose, teach, or even suggest the structure of the silicon-containing polysulfide-type polymer which is now claimed in the method of claim 1 (and previously claimed in the method of claim 9). As such, the Applicants respectfully submit that the Examiner has improperly interpreted the scope and content of the prior art, as well as the differences between the claimed invention and the prior art, in view of the fact Ely expressly teaches that at least 70% of its SH groups are required to remain unreacted in its polysulfide polymer. As such, the Examiner's rejection of claims 1-10 over Ely is respectfully overcome.

Claims 1-10 also stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 4,096,131 to Price et al. (hereinafter "Price") in view of Ely. In particular, the Examiner contends that Price et al. discloses a process of forming a silyl containing polysulfide polymer by mixing a polysulfide with sulfur and methylvinyltrimethoxysilane. The Examiner admits that Price et al. does not disclose a process wherein both a nitrogen containing base and sulfur are mixed with claimed components (A) and (B). However, the Examiner contends that it would have been obvious to prepare a silicon containing polysulfide type polymer by mixing a vinyl silane, mercapto terminated polysulfide, nitrogen containing organic base and elemental sulfur because Ely teaches that pyridine and sulfur are functional equivalents.

However, the Applicants point out that Price does nothing to cure the deficiency of Ely. In fact, Price perpetuates the deficiency of Ely. For example, column 1, lines 18-25 of Price states "[t]he present invention provides a sealant composition comprising an SH containing

reaction product . . .” (emphasis added). Clearly, the reaction product of Price also includes SH groups, as further evidenced in Price itself. For example, Price further states that “the silane having 1 or 2 groups capable of reaction with SH, and the silane reacting with 3-30% of the SH groups of the polysulphide . . .” (emphasis added) (see column 1, lines 36-39 of Price). Finally, Price states that “[t]he sealant composition contains unreacted SH groups . . .” (emphasis added) (see column 1, line 66 of Price). Thus, the teaching of Price is the same as the teaching of Ely, i.e., Price expressly teaches that at least 70% of its SH groups are required to remain unreacted in its polysulfide polymer. As such, even a combination of Price and Ely does not teach, disclose, or even suggest the silicon containing polysulfide type polymer formed via the method claimed in the subject application. Thus, the Examiner’s rejection of claims 1-10 over Price in view of Ely is also respectfully overcome.

In view of the foregoing, the Applicants submit that independent claims 1 and 9, as well as dependent claims 2-8 and 10-12, are both novel and non-obvious over the prior art including over Ely and Price, either individually or in combination. As such, the Applicants believe the subject application is in condition for allowance, and such allowance is respectfully requested.

The proper fee for a one month extension of time is submitted herewith. However, if necessary, the Commissioner is authorized to charge Deposit Account 08-2789 in the name of Howard & Howard Attorneys PLLC for any additional fees or to credit the account for any overpayment.

Respectfully submitted,

HOWARD & HOWARD ATTORNEYS PLLC

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Date

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